



# ATSM-49-R Surface Mount Crystals

## FEATURES

Resistance Weld (HC-49S-SMD)  
 AT-Cut Fundamental and Overtone Modes  
 Swept Quartz Options Available  
 Rugged Design to support harsh environments

## APPLICATIONS

Avionics and Aerospace  
 Communication and Navigation  
 Military Radios  
 Instrumentation and Industrial  
 Test and Measurement Equipment

## ORDERING INFORMATION

	<b>ATSM-49</b>	<b>-R</b>	<b>00.0000 MHz</b>
<b>Product</b>			
<b>ATSM-49:</b> Fundamental (AT-cut)			
<b>520-010:</b> Fundamental (AT-Cut), -20°C to +70°C operating temperature			
<b>520-210:</b> Fundamental (AT-Cut), 18pF load capacitance			
<b>520-230:</b> Fundamental (AT-Cut), 20pF load capacitance			
<b>520-260:</b> Fundamental (AT-Cut), 32pF load capacitance			
<b>520-910:</b> Third Overtone (AT-Cut), 18 pF load capacitance			
<b>520-930:</b> Third Overtone (AT-Cut), 20pF load capacitance			
<b>520-960:</b> Third Overtone (AT-Cut), 32pF load capacitance			
<b>522-210:</b> Fundamental (AT-Cut), -40°C to +85°C operating temperature			
<b>522-215:</b> Third Overtone (AT-Cut), -40°C to +85°C operating temperature			
<b>471-010:</b> Fundamental (BT-Cut)			
<b>RoHS Compliance</b>			
<b>-R:</b> RoHS Compliant			
<b>-V:</b> non-RoHS			

Example of parallel resonant part Number: ATSM-49-R 16 .0000 MHz  
 Example of series resonant part Number: SRATSM-49-R 16 .0000 MHz

Notes	
Note 1	Series resonant designated "SR" prefix (i.e., SRATSM-49-R)
Note 2	24.000 to 40.000 MHz have a tolerance of $\pm 50$ ppm and 100 ppm stability

## ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Frequency Range	F <sub>0</sub>	3.579545		72	MHz	
Frequency Tolerance	F/F	-30		+30	ppm	@ +25°C, see ordering information.
Frequency Stability	$\Delta F/F$	-50		+50	ppm	Over the operating temperature range
Aging		-3		+3	ppm	1 <sup>st</sup> year
		-5		+5	ppm	Thereafter per year (up to 3 <sup>rd</sup> year)
Load Capacitance			18		pF	See Note 1
Shunt Capacitance				7	pF	
ESR		See ESR Table				
Drive Level	DL	25	100	500	$\mu$ W	
Insulation Resistance	IR	500			M $\Omega$	

## Temperature

Operating Temperature	T <sub>A</sub>	-10		+70	°C	
Storage Temperature	T <sub>S</sub>	-55		+125	°C	

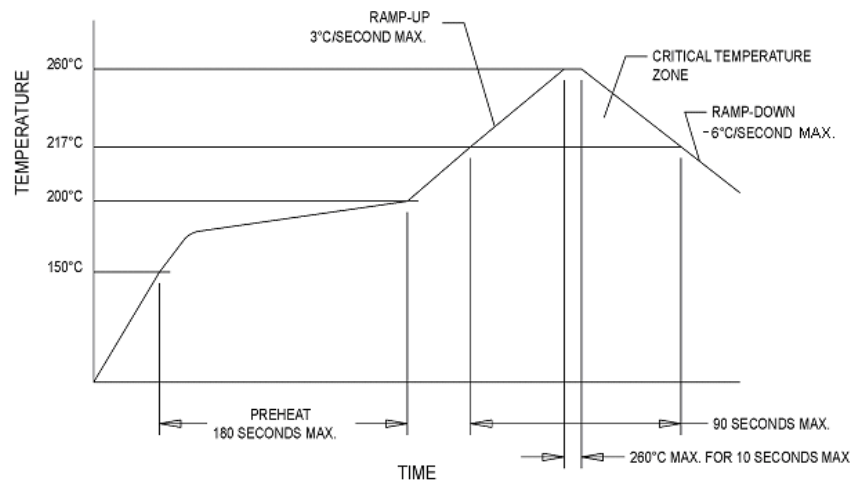
## ESR Table

Frequency Range	ESR (MAX)
Fundamental (AT-cut)	
3.579 to 3.999 MHz	200 $\Omega$
4.000 to 4.999 MHz	150 $\Omega$
5.000 to 5.999 MHz	120 $\Omega$
6.000 to 9.999 MHz	100 $\Omega$
10.000 to 13.999 MHz	80 $\Omega$
14.000 to 40.000 MHz	50 $\Omega$
Fundamental (BT-cut) – Note 2	
24.000 to 50.000 MHz	100 $\Omega$
Third Overtone (AT-cut) – Note 3	
25.000 to 39.999 MHz	100 $\Omega$
40.000 to 72.000 MHz	80 $\Omega$

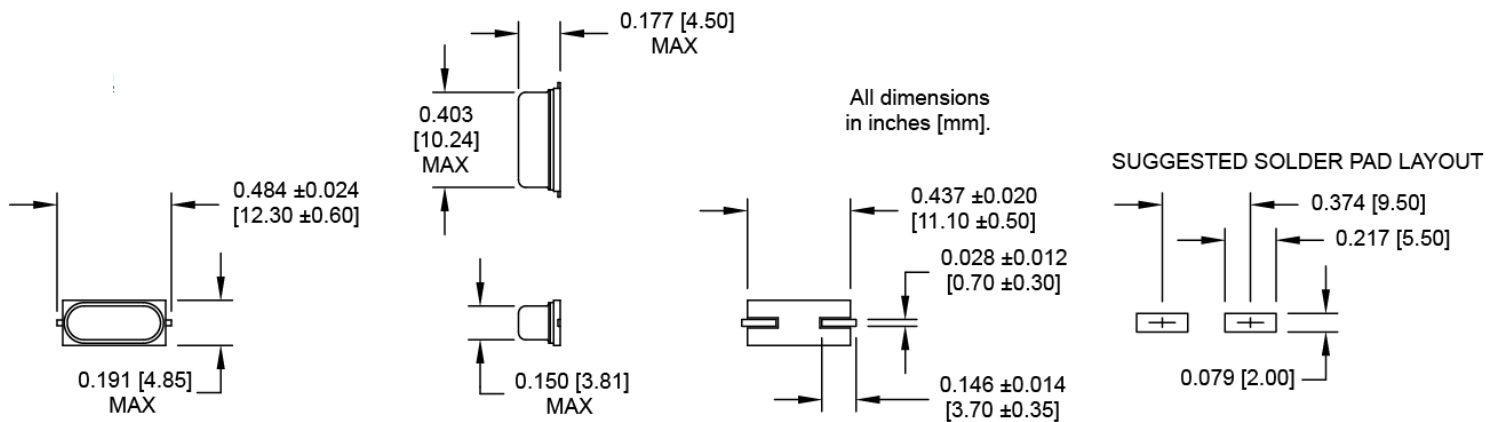
## ENVIRONMENTAL CONDITIONS

Aging	Internal Specification, 168 hrs. at +55°C
Physical Dimensions	MIL-STD-883, Method 2016
Shock	MIL-STD-202, Method 213 Condition C, 100 g
Vibration	MIL-STD-202, Methods 201 & 204, 10 g from 10-2000 Hz
Thermal Cycle	MIL-STD-883, Method 1010, Condition B, -55°C to +125°C
Gross Leak	MIL-STD-202, Method 112, 30 sec. Immersion
Fine Leak	MIL-STD-202, Method 112, 1 x 10 <sup>-8</sup> atm cc/sec. min.
Resistance to Solvents	MIL-STD-883, Method 2015, Three 1-minute soaks
Max Soldering Conditions	See solder profile

## LEAD FREE SOLDER PROFILE



## MECHANICAL AND PIN OUT INFORMATION



MtronPTI reserves the right to make changes to the product(s) and service(s) described herein without notice.  
No liability is assumed as a result of their use or application.